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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09 772,325	01 29 2001	Atsushi Dohi	7055155554	8692

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EXAMINER

STOCK JR, GORDON J

ART UNIT PAPER NUMBER

2877

DATE MAILED: 06 09 2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/772,325

Applicant(s)

DOHI, ATSUSHI

Examiner

Gordon J Stock

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) 26 and 34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-19 and 27 is/are rejected.
- 7) ☒ Claim(s) 20-25, 28-33 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. **Claims 26 and 34** are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected inventions, there being no allowable generic or linking claim.

Election was made without traverse in Paper No. 10.

Specification

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

3. The abstract of the disclosure is objected to because the phrase, "a liquid crystal layer 11," of line 2 should read --a liquid crystal layer (11)--. Correction is required. See MPEP § 608.01(b).

Claim Objections

4. **Claims 4 and 13** are objected to for the following: claims must contain only one period at the end. So the ellipses on line 3 of both claims need to be removed. Corrections are required.
5. **Claim 27** is objected to for the following: the phrase, "said liquid crystal layer," of line 11 lacks antecedent basis. Correction is required.
6. **Claim 33** is objected to for the following: the phrase, "said reflection region," lacks antecedent basis. And "the method" should read --the device--. Corrections are required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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8. **Claims 1, 10, 19, and 27** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. Regarding **claims 1, 10, 19, and 27**, the phrase "i.e." renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

11. **Claims 1-3, 7, 10-12, and 16** are rejected under 35 U.S.C. 102(a) as being anticipated by **Kwok et al. (6,081,337)**.

As for **claims 1-3, and 7**, Kwok discloses the following: a light receiving step of entering light from a light source into said liquid crystal layer via a first polarizing means and receiving, via a second polarizing means, reflected light exited from said liquid crystal layer by reflecting at said reflection region; a dispersing step; a wavelength deriving step of finding a wavelength satisfying a polarizing plane-maintaining condition in that said reflected light returns maintaining a same polarizing plane as a polarizing plane at the time of said entering; a $d\Delta n$ deriving step; and a thickness deriving step (Fig. 2; col. 3, lines 5-65; col. 6, lines 22-65; col. 7, lines 1-65; col. 8, lines 20-30); said wavelength deriving step is performed by finding a value of a wavelength at which said reflected light intensity assumes an extreme value (Figs. 6 and 7);

wherein a Jones matrix is used (col. 6, equation 4; col. 8, lines 20-25); wherein a plurality of angles in a range of zero to ninety degrees are performed by LC rotational shift (col. 6, lines 25-35).

As for **claims 10, 11, 12, and 16**, Kwok discloses the following: a light source; a first polarizing means; a second polarizing means; a light receiving means; a dispersing means; a wavelength deriving means; a $d\Delta n$ deriving means; a thickness deriving means (Fig. 2; col. 3, lines 5-65; col. 6, lines 22-65; col. 7, lines 1-65; col. 8, lines 20-30); said wavelength deriving step is performed by finding a value of a wavelength at which said reflected light intensity assumes an extreme value (Figs. 6 and 7); wherein a Jones matrix is used (col. 6, equation 4; col. 8, lines 20-25); wherein a plurality of angles in a range of zero to ninety degrees are performed by LC rotational shift (col. 6, lines 25-35).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. **Claims 4-6 and 13-15** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kwok et al. (6,081,337)**.

As for **claims 4 and 13**, Kwok discloses everything as above (see **claims 1 and 10**). Kwok discloses a relationship between twist angle, cell gap, a wavelength, and an integer, N (col. 7, equations 6 and 11). Kwok is silent concerning the specific β and α . However, Kwok's equation 11 is just a rearrangement of an equation using the specific β and α . Through

rearrangement of the equations and substitution of the equations in column 7, one can see that $N\pi = \Theta ((1 + (\pi d\Delta n / \Theta \lambda)^2)^{1/2})$. Therefore, it would be obvious to one skilled in the art that the specific β and α are used in the obtaining of a relationship between wavelength and retardation, for equation 11 in another form is $N\pi = \Theta ((1 + (\pi d\Delta n / \Theta \lambda)^2)^{1/2})$.

As for **claims 5-6 and 14-15**, Kwok discloses everything as above (see **claims 1 and 10**). In addition, Kwok discloses the transmission axes of the polarizing means are in crossed orientation (Fig. 2, col. 6, lines 20-30). He is silent concerning the orientation of the axes in respect to each of the polarizing means. However, fixed crossed orientation maintains orthogonality of the transmission axis with the optical axis; thereby, the arrangement of the polarizing means could be either parallel with each other or orthogonal for this will maintain the orthogonality in regards to the transmission axes in respect to the optical axes. Therefore, it would be obvious to one skilled in the art to have the transmission axes of the polarizing means either parallel or orthogonal to one another in order to maintain a fixed crossed orientation with the optical axis.

14. **Claims 8 and 17** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kwok et al. (6,081,337)** in view of **Oh-Ide et al. (6,233,030)**.

As for claims 8 and 17, Kwok discloses everything as above (see claims 1 and 10). Kwok is silent concerning a Cauchy dispersion formula being used. However, Oh-Ide in a liquid crystal display apparatus teaches that a Cauchy dispersion formula is used to determine retardation value of a liquid crystal layer. The retardation value is well known in the art as the product of the thickness and the difference between the ordinary and extraordinary indices of refraction, $d\Delta n$. Therefore, it would be obvious to one skilled in the art at the time the invention

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was made to use a Cauchy dispersion formula, for the retardation value is used to obtain the cell gap.

15. **Claims 9 and 18** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kwok et al. (6,081,337)** in view of **Yamazaki et al. (6,266,113)**.

As for claims 9 and 18, Kwok discloses everything as above (see **claims 1 and 10**). However, Kwok is silent concerning the reflection region having a diffusibility and light being received at a position off a positive reflection region direction corresponding to said entering. However, Yamazaki in a reflection type liquid crystal display device teaches a liquid crystal panel having diffusive properties and having positive anisotropy with positive reflection out of the liquid crystal (Figs. 1-3, 19, 20; L7, col. 13, lines 20-30). Therefore, it would be obvious to one skilled in the art at the time the invention that the object being measured would comprise a reflection region having diffusibility and positive reflection out of the region, for there are reflection type liquid crystal display devices comprising diffusive regions with positive reflection.

Allowable Subject Matter

16. **Claims 19 and 27** would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, and any objections as set forth in this Office action.

17. **Claims 20-25, and 28-33** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and rewritten to overcome any objections.

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18. As to **claim 19**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in a method of measuring a thickness d of a liquid crystal layer the particular light receiving step, in combination with the rest of the limitations of **claims 19-25**.

19. As to **claim 27**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in a device for measuring a thickness a monochromatic light source, in combination with the rest of the limitations of **claims 27-33**.

Fax/Telephone Numbers

If the applicant wishes to send a fax dealing with either a proposed amendment or a discussion with a phone interview, then the fax should:

- 1) Contain either a statement "DRAFT" or "PROPOSED AMENDMENT" on the fax cover sheet; and
- 2) Should be unsigned by the attorney or agent.


This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

Papers related to the application may be submitted to Group 2800 by Fax transmission. Papers should be faxed to Group 2800 via the PTO Fax machine located in Crystal Plaza 4. The form of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Machine number is: (703) 308-7722

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gordon J. Stock whose telephone number is (703) 305-4787. The examiner can normally be reached on Monday-Friday, 10:00 a.m. - 6:30 p.m.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

gs
May 28, 2003


Zandra V. Smith
Primary Examiner
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